

Claims

- [c1] 1. A method of tying two or more components together by means of a fastener, in which each component is provided with a hole and the components are placed so that the holes overlap one another in order to receive the fastener in the holes, the fastener placed in the holes being mechanically pressure-loaded and heated in order to deform the fastener, thereby tying the components together, wherein the fastener is heated essentially only during the fastener deformation phase in order to minimize the heat transfer from the fastener to the components being tied and tying is carried out with both the fastener and the components made of the same or similar alloys included in the intermetallic alloys group of materials.
- [c2] 2. The method as recited in claim 1, wherein the fastener is first pressure-loaded and then heated while maintaining the pressure loading.
- [c3] 3. The method as recited in claim 1, wherein the fastener is pressure-loaded by means of a tool and mechanical contact between the pressure loading tool and the fastener is maintained after deformation of the fastener in

order to cool the fastener by transferring heat from the fastener to the pressure loading tool.

- [c4] 4. The method as recited in claim 3, wherein the pressure loading tool is cooled in order to facilitate heat transfer from the fastener to the pressure loading tool after deformation of the fastener.
- [c5] 5. The method as recited in claim 1, wherein a protective component is arranged at the deformation end of the fastener in order, during deformation of the fastener, to prevent direct contact between the hot-deformed material of the fastener and the component that is arranged nearest to the deformation end of the fastener.
- [c6] 6. The method as recited in claim 1, wherein the components are tied together in a non-preheated state.
- [c7] 7. The method as recited in claim 1, wherein the fastener is applied in the holes in a non-preheated state.
- [c8] 8. The method as recited in claim 1, wherein the fastener is pressure-loaded and heated using a combined pressure loading and heating tool.
- [c9] 9. The method as recited in claim 8, wherein the fastener is pressure-loaded between two electrodes of the combined pressure loading and heating tool.

- [c10] 10. The method as recited in claim 1, wherein the fastener is heated by passing an electrical current through the fastener.
- [c11] 11. The method as recited in claim 1, wherein the fastener is heated in an atmosphere containing an inert gas in order to minimize oxidation of the fastener and/or the components.
- [c12] 12. The method as recited in claim 1, wherein prior to deformation of the fastener, a layer of material, such as a soldering foil, is arranged between the components in order to join the components together by means of the layer of material in a subsequent process.
- [c13] 13. The method as recited in claim 1, wherein the components are at least temporarily tied together to form a self-supporting construction with the components substantially fixed to one another, before being joined to form an intended load-transmitting construction element at a subsequent stage of manufacture.
- [c14] 14. The method as recited in claim 13, wherein the components are joined by soldering.
- [c15] 15. An article of manufacture joined together by soldering and comprising:

at least two intermetallic alloy components soldered together and said components being tied together prior to soldering by an intermetallic alloy rivet, said article being manufactured by a method including tying the components together by means of the rivet and in which each component is provided with a hole and the components are placed so that the holes overlap one another in order to receive the rivet in the holes, the rivet being placed in the holes and mechanically pressure-loaded and heated in order to deform the rivet, and thereby tying the components together, the rivet is heated essentially only during a rivet deformation phase in order to minimize heat transfer from the rivet to the components that are being tied, the components being made of the same or similar alloys included in the intermetallic alloys group of materials.

[c16] 16. The article of manufacture as recited in claim 15, wherein said article is an aircraft component.

[c17] 17. The article of manufacture as recited in claim 15, and further comprising a rivet made from an intermetallic alloy and used for tying together the two components made from intermetallic alloy.

[c18] 18. The article of manufacture as recited in claim 17, wherein the rivet is made from an alloy selected from the

group consisting of TiAl, NiAl and FeAl alloy.

- [c19] 19. The method as recited in claim 13, further comprising creating at least a temporary tying of one or more components forming a unit for performing a subsequent treatment, such as soldering of the unit.